

25X1



December 8, 1964

25X1



P. O. Box 8043
South West Station
Washington, D. C. 20024

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Dear Sir:

Enclosed are five copies of a Preliminary Technical Report on Item 2 of Task II of the subject contract. The report title is "Signal Strength of Broadcast Radiation of Closed-Circuit TV" and it indicates test data available and equipment availability for testing. The enclosed report is submitted in accordance with the requirements of the subject contract.

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WAS:ws
Enclosures

Declass Review by NGA.

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MEMORANDUM FOR: *Record*

*Original to RYN for
info.*

RD

10 Dec 64
(DATE)

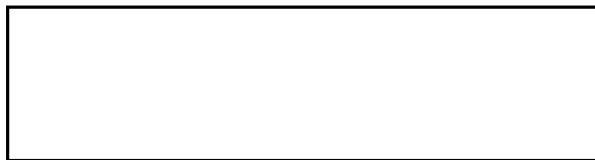
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John
Since the contract calls for 5
copies for contract submitted, I sent
two additional copies
direct to Russ D. *Russ D.*
December 8, 1964

Russ,

Enclosed are two copies of a preliminary report on
your Closed Circuit TV problem. I have also sent five
copies to John C. for my contract requirements.

I plan to write a procedure for the conducting of
a pilot test, please let me know if there is anything
further you want.



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Bung TV set
& manual
Data

27 Mar 63

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Maint & Supp Bn. TV Det.
US Army Post Str

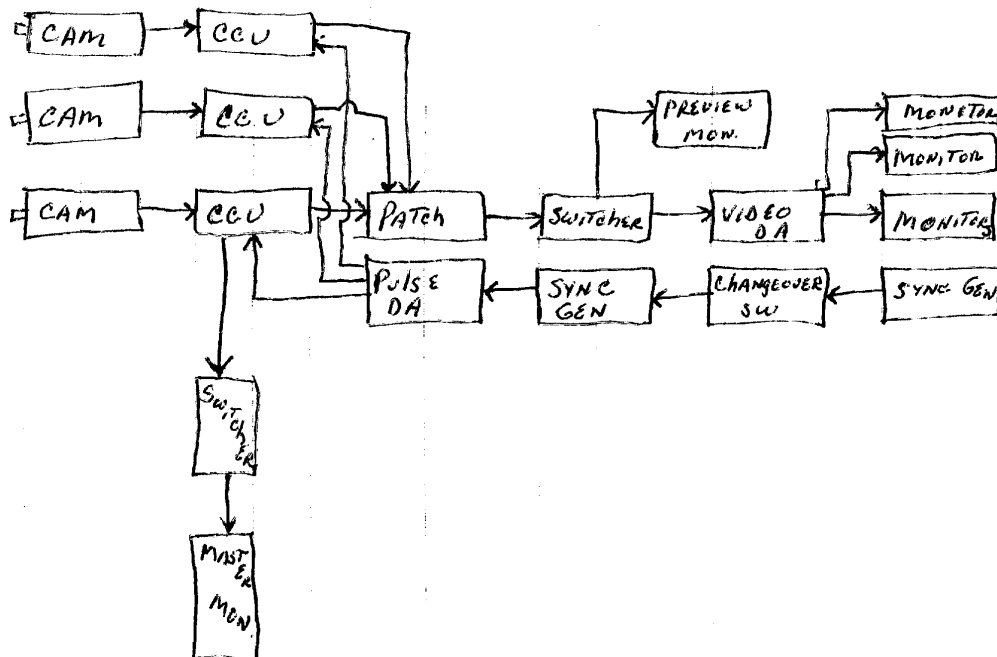
- 8 - CAMERA & CCU + spares
- 12 - MONITORS + spares
- 4 - PULSE DA 1/3 cam.
- 4 - VIDEO DA 1/3 mon.
- 2 - SYNC GEN
- 1 - SYNC GEN CHANGE OVER SWITCH
- 1 - 10 POSITION SWITCHER w/ POWER SUPPLY
- 2 - 280V POWER SUPPLY
- 1 - 24V POWER SUPPLY
- 4 - PATCH PANELS.
- 1 - 8 pos. VIDEO SWITCHER (TS-2) 8 IN - 1 OUT.
- 8? - 9? Waveform monitor

Personnel required to operate and maintain 8 cameras
and 15 monitors;

2 Video men, supervisors type

6 Maintenance men (can perform switching)

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20 March 63

CCTV

Stations

Remarks

Director's Office

Operations Staff

Joint Working Area. Lot of use at infrequent intervals.

Collateral Support Div.

Largest number of cameras

Production Services Div.

WAC plots

Publications Div.

Technical Intelligence Div. Occasional use.

Liaison Detachments (DIA?)

Army

Navy

Air Force

DIA

NSA

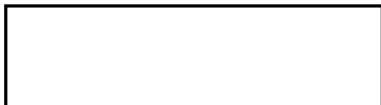
CIA/PID

Main conference room

Briefings?

PID

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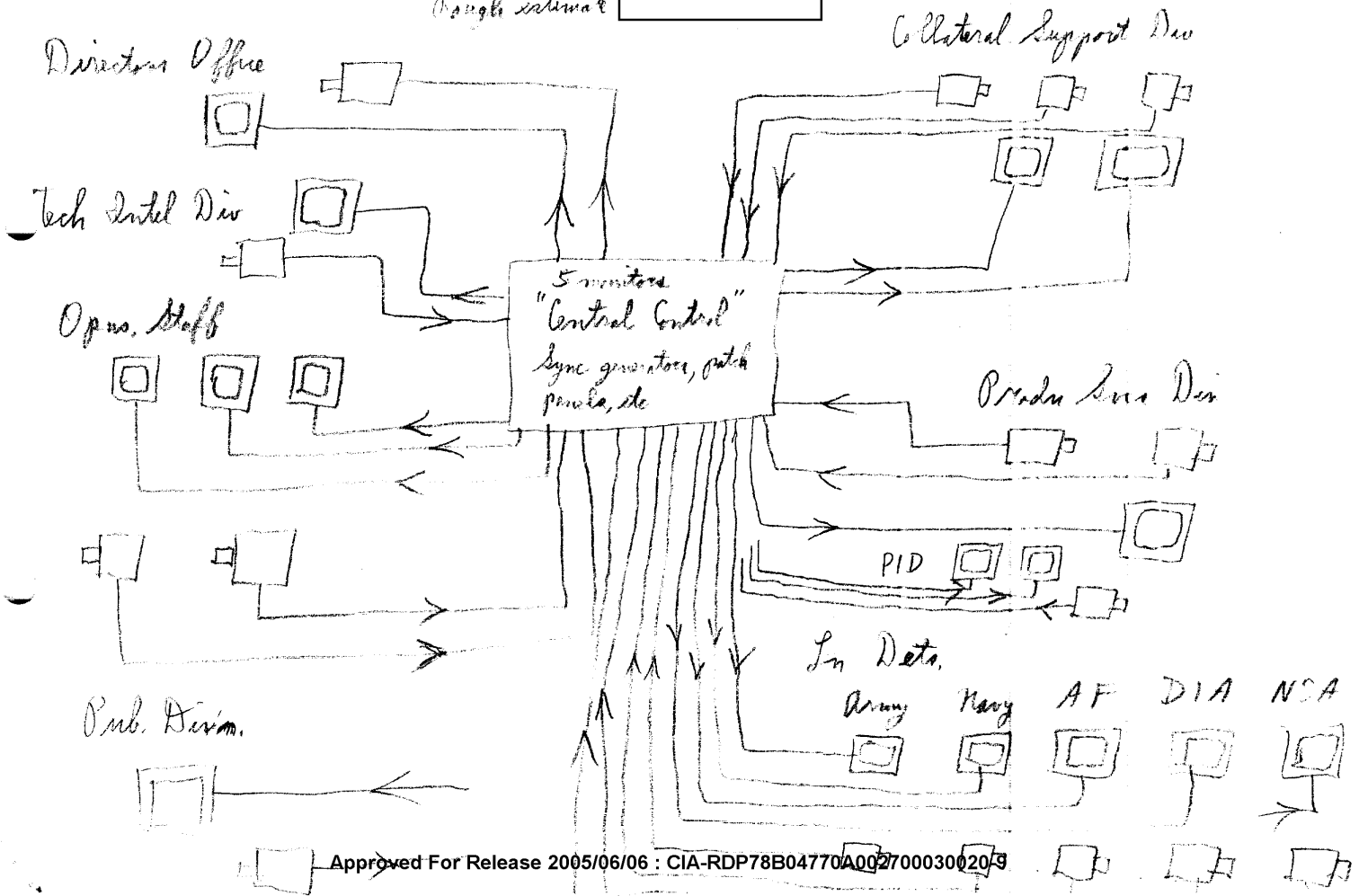


1. Which Div. or Staff would you communicate with the most?
2. How many man-hours used in "travel"?
3. Nature of image to be transmitted -- photo and typed collateral? Transparencies? WAC charts?

20 March '63

Rough estimate

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CCTV

20 Mar 63

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CSD

Does not need CCTV between office
& workers, Need between workers & PIs,

See



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Hook up to 6th floor? "Lot of requests for ACL"

Steve & Burt:

1. What sizes & types of documents?
Photostat, photograph, True-graphs?, Minicard?
How large? Colors?

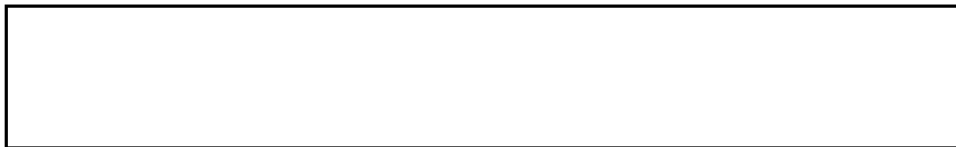
2. Who ~~requests~~ has the most requests? Who is not?

CCTV

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Re talk with
at Minicard:



The overall image space on a minicard
is 0.475" x 0.700"

This space could be approximately filled by either
of the following at the reductions given below:

20:1 reduction legal size (8½" x 14") usually
typewritten material

38:1 reduction 18" x 22", usually
drawings or other graphic material

A sheet of legal size typing paper can hold
65 lines of type.

Roughly, 10" of kinescope, 525 line system,
can show 8 double space or 16 single space
lines and be quite readable.

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CCTV

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Army - [redacted]

Oaks: Comm with other working areas. Would be good!
Collateral: Usually get a whole box & then go through it. Not single documents.

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Army^m - [redacted] Comm with other working areas,
Lot of work w/ Dino Co shop.

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Files: [redacted]

Could use a teletypograph or similar device
for ordering files.
Cannot see use for CCTV

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Questions for TV Br. at APC

1. How long a run before an amplifier is needed
 - a. From camera to control
 - b. From control to monitor
2. Is there a switcher which permits any combination of any one of, say, seven cameras, to any one, two or three of fifteen monitors? Patch panel necessary? What is effect on bandwidth?
3. How can a signal be detected? Standard eqt or special? How far away?
4. What density range of transparency should be used? $\left. \begin{array}{l} 0.4 \text{ to } 1.4 \quad \Delta D \approx 1.0 \\ 0.3 \text{ to } 1.6 \quad \Delta D \approx 1.3 \end{array} \right\} \text{Inputs. Can existing eqt accept a range } (\Delta D) \text{ of } 1.3 - 1.5?$
5. How to connect 2 or more monitors to the output of one camera.

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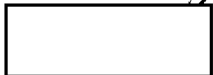
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CCTV:

Possible source of equipment to encrypt
TV signals. Info received from 

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 TV Branch, Army Pictorial Division,
OC Sig O, Pent.

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R. A. D.

~~SECRET~~

13 March '65

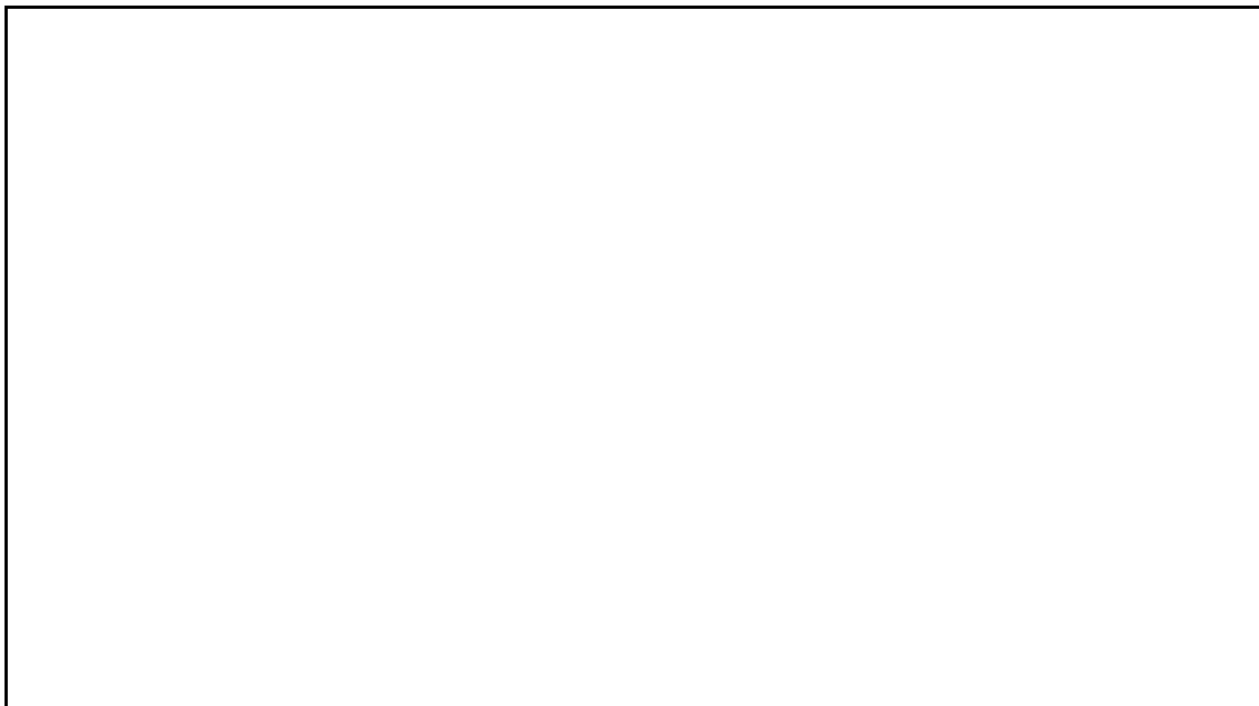
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Would you ask  if
he can get catalogs for me from the following
companies?

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In addition to the more common line scan rates
I would like to have information on high definition
equipment, e. g., 1000 lines per frame. Also want
the information to include equipment such as
switchers, effects, distribution amplifiers and accessory
equipment, in addition to cameras and monitors.
Prices not needed now.

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1 Mar 63

Memo For Record:

Ref telephone conversation with [redacted] 25X1

March D.C.
6:10 PM

8 Feb 63. Mr. [redacted] 25X1

[redacted] was recommended to me by [redacted] 25X1

Office of Comm. (Eng.). Contact with [redacted] was set up by [redacted] Security Branch. 25X1

[redacted] stated that [redacted] has some high quality CCTV equipment "complete & ready to go". This equipment uses a 1 1/2" vidicon and is available as 945 line and as 1029 line scan. It gives better than 1000 (1100-1150) horizontal TV lines. The equipment will be exhibited at the IRE show in New York the last week in March. He will call me when it comes to Washington. 25X1

(24-28 Mar, at IRE Hq, 1-E 21st NYC)

[redacted] is working on a prototype 1203 line scan for a special order. 25X1

The highest scan rate [redacted] eqt, now in Washington has a 700 line scan. 25X1

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1 Mar 63

Memo For Record:

Ref telephone conversation with [redacted]
[redacted] Co., on 28 Feb 63.

Approximate costs of [redacted] CCTV equipment;
600 line

1 1/2" vidicon

1029 line

Minimum system

(Camera & monitor, w/o cable,
lens, audio, tripod, etc.):

Complex system (3 cameras,
3 CCU's, 1 switcher, 6 monitors,
w/o cable, lens, audio, tripod, etc).

The "High-Resolution" (1029 line) equipment will be on display at the IEEE (formerly Inst. Radio Engrs) convention in New York City 24-28 March. It will then go to the west coast and will later be placed on display in Washington.

RFD

CCTV

1. Intercom, 2-way.
2. Minimum adjustments required on camera.
3. Use with opaque or transparent material.
4. Zoom lens for observing a small portion of the material. Require a monitor so that "camera man" can check the area covered.

Section III

5. Comparison of video transducers See p 49, Table 3-3

FSS	Transparencies only	200 P-C	Cheapest
Vidicon	Opaque or transparency	High light levels 50-150 fc	Medium cost
I.O.	" " "	Low " "	Highest cost
Microscope	" " "	Edge flare, poor shading, black, and instab. etc., poor 1/2	?

6. Transfer characteristics for the ^{video} transducers
7. Cable lengths involved.

7. Proximity of power lines or transformers, especially near coax.
8. Spare parts, tubes especially. (Spare vidicon?)
9. Crosstalk + hum. Where possible, separate power video & audio cables. The two points (camera & mount) ~~will~~ ^{may} have different ^{phase for video} AC supplies. IR drop through ground may result in hum.
10. Illumination levels: See Section IV p 140.
11. Special effects: Split screen, V or H. Wipes
12. Slow scan feasible? No, limits use to static material
13. Bandwidth for high-performance?

Size of viewing screen

Bandwidth varies as square of "resolution"

Remote control

Multiple cameras -- switches

Effects -- split screen

Multiple viewers

As background (only), provide data on;

- ✓ 1. Bandwidth required versus number of lines.
2. Approximate costs
3. Resolution on screen as related to original.
4. Comparison of characteristics of various transducers.
5. Other uses than simple image transmission;
 - a. Briefing on important info.
 - b. Surveillance
 - c. Integration with image manipulation equipment.

For expenditure in Feb

29 Jan 63

High Performance CCTV (2 station)
Feasibility Study. (PID)

2 Phases

25X1 1. See [] & find out what he
wants (needs) in terms of quality, size, etc. ^{from where} to where?
Write a staff study on the feasibility. [] 25X1

25X1 [] after seeing []. Make written comparison
between IO, vidicon & flying spot scanner.

2. Procure the necessary eqt (probably
a one-way kit would be enough to start) &
run tests on feasibility (resolution, image size,
color sensitivity, controls, etc).

1. Security: Radiation of signal?

2. Interference: Pick up or radiate noise while
(coax) runs through walls?

Memorandum To :
Through

Subject: Staff Study -- Closed Circuit Television

1. PROBLEM:

WSP

2. ASSUMPTIONS:

- a. That development of a satisfactory electronic image manipulation device (EIMD?) will raise the state of the art in image ~~development~~ pickup tubes, amplifiers, transmission media and display equipment well above the present state of the art in similar CCTV equipment.
- b. That the advantages to be gained in the definition resulting from development of an image manipulator will outweigh the delay in delivery of the equipment.
- c. That equipment is available that will provide the desired "safety" at the bandwidths we will have for our proposed definitions.

3. FACTS BEARING ON THE PROBLEM:

a. The maximum scan rate available as a shelf item is

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1035 lines [] ; 1029 []

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check by subject
in back
ground data:
e.g.

b. There are many different scan rates on the market;

e.g. 525, 625, 675, 875, 900, 1000, 1029 and 1035.

c. The various scan rate systems, with only one known exception, are not compatible. e.g. [] Navy eqt.

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d. An economic level in scan rate is reached when the increase in cost of the equipment ~~is~~ not justified by the increase in ~~definition~~ definition.

e. One adequate audio communication system would be needed to discuss the image and, as a ^{another} telephone facility for technical control. Security. Gray phones good for video?

f. Costs of equipment rise rapidly with increases in definition (e.g. 9 to 13 time increase for 2X increase in definition, [] 600 lines to 1029 lines)

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g. No safe means of encrypting TV signals as yet. May be 2 years before good system is available.

h. No way to be sure that requester is authorized to get the info. Similar problem with ACSIMATIC. Limitation on classification of material?

Facts, continued.

3 i. Personnel requirements. Two maintenance men; two "technical directors"; one chief. Three five would be needed for an eight-hour day. Some of them would have to come in early to turn the equipment on early enough to have it fully warmed up by 0800 hrs. All personnel would have to be fully cleared, i.e., blue picture badge.

j. The electronic equipment alone is not the answer. A lot of accessory equipment would be required such as a special easel to hold collateral; another for WAC's; another for Minicard; another for Vue-Graphs; for graphics (sizes); for roll film; etc.

4. DISCUSSION:

high-definition a. The best system would be one which integrates CCTV, electronic image manipulation and the necessary "safety" in handling. In this way an image could be manipulated to produce the desired information, ^{and} transmitted to another point, in complete safety, for simultaneous viewing.

5. CONCLUSIONS:

- a. Include the requirements for a hi-def CCTV system in the requirements for image manipulation.

6. ACTION RECOMMENDED: